ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

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Report No.:	50-528/96-13 50-529/96-13 50-530/96-13
Licensee:	Arizona Public Service Company
Facility:	Palo Verde Nuclear Generating Station, Units 1, 2, and 3
Location:	5951 S. Wintersburg Road Tonopah, Arizona
Dates:	August 25 through October 5, 1996
Inspectors:	K. Johnston, Senior Resident Inspector J. Kramer, Resident Inspector D. Garcia, Resident Inspector D. Carter, Resident Inspector V. Gaddy, Resident Inspector, Fort Calhoun
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ATTACHMENTS:

Attachment 1: Partial List of Persons Contacted
List of Inspection Procedures Used
List of Items Opened, Closed, and Discussed
List of Acronyms

EXECUTIVE SUMMARY

Palo Verde Nuclear Generating Station, Units 1, 2, and 3
NRC Inspection Report 50-528/96-13; 50-529/96-13; 50-530/96-13

Operations

- Although operator performance, shift supervision command and control, and overall communications were not effective in preventing an SG overfill event, the licensee's initial corrective actions were prompt, cautious, and thorough, and the subsequent investigation was self-critical and demonstrated the licensee's commitment to operations excellence (Section O1.1).

- Operators displayed a high degree of professionalism and demonstrated the implementation of effective corrective actions when performing the high rate steam generator blowdowns (Section O1.2).

- An example of weak attention to detail was identified by the inspectors regarding the degraded Class 1E Motor Control Center panel doors (Section O2.2).

- The licensee did not implement fully effective corrective actions following a May, 1996, event involving the control of ventilation boundary doors, when they recognized weaknesses in worker understanding of door control procedures and in the labeling of doors. Three similar events subsequently occurred which could have been prevented had corrective actions been implemented. Following the third event, the licensee implemented more comprehensive interim corrective actions and planned longer term corrective actions to prevent recurrence (Section O2.3).

Maintenance

- The licensee responded effectively to problems experienced while lifting the Unit 1 upper guide structure (UGS) by stopping the evolution, involving plant management, and developing an appropriate plan (Section M1.3).

- Management's expectations and procedural requirements for performing procedure steps out-of-sequence were not clearly understood by certain maintenance personnel performing a surveillance (Section M4.1).

Engineering

- Civil and system engineering organizations demonstrated poor communications on the status of unsealed ventilation boundary penetrations. Additionally, although civil engineering had made progress in the resolution of penetration design deficiencies, they had not ensured that the interim condition had been adequately reviewed for system impact (Section E2.1).

- Engineering's recently established testing of the auxiliary building essential ventilation design basis requirement to develop a measurable negative pressure in emergency mode was seen as improvement to the testing program, although the acceptance criteria and the initial conditions for the test had not been well established to assure that the test results were both accurate and could provide meaningful trend information (Section E3.1).

Plant Support

- Radiological protection (RP) personnel demonstrated weak health physics practices when entering infrequently accessed areas that have not recently been surveyed and in the fabrication of an inadequate drip catch. However, RP management responded appropriately to the inspectors' concerns (Section R1.1).

- In an effort to improve on material condition and housekeeping issues, the licensee initiated a housekeeping improvement and area ownership program. However, the inspectors continued to identify material condition and housekeeping issues which had not been previously identified by the licensee (Section R2.1).

Report Details

Summary of Plant Status

Unit 1 began this inspection period at essentially 100 percent power. On September 3, the unit began an end-of-core life power coastdown. On September 21, the unit began Refueling Outage 1R6 and at the end of the inspection period was defueled.

Units 2 and 3 operated at essentially 100 percent power for the duration of the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 Feedwater Spill While Filling Steam Generator (Unit 1)

a. Inspection Scope (71707)

On September 22, while in Mode 5, operators overfilled a Unit 1 steam generator and spilled approximately 4000 gallons of uncontaminated condensate water through an open atmospheric dump valve to the main steam support structure. They had been in the process of implementing a procedure to cool the steam generator metal mass to facilitate outage work. The inspectors reviewed the licensee's response to the event.

b. Observations and Findings

The licensee investigated the cause of the spill and identified several weaknesses in engineering performance. The temporary level instrument used to measure the SG level was not connected at a location which supported the intended use. The level instrument was connected to the top of the SG, which was not vented, so the instrument provided an incorrect level reading once the line to the vented atmospheric dump valve was covered with water. In addition, the licensee considered that the temporary installation did not receive an adequate independent design review and could have been improved by an additional diverse level monitoring method.

The licensee also identified several weaknesses with operations performance. Crew supervision did not maintain command and control of the evolution. The shift supervisor and control room supervisor allowed mechanical engineering to lead the evolution and did not direct or concur with all manipulations. Verbal communications were weak, in that the reactor operator failed to notify supervision of difficulty in raising the SG level.

The licensee performed the following actions as a result of the spill:

- Place the evolution on hold.
- Contacted appropriate levels of management and the inspectors.

- Initiated investigations to review the impact of the spill on main steam piping and supports and, subsequently, determined that no impact had occurred.

- Initiated investigations to determine the cause of the event from both instrumentation and human performance perspectives.

Before restarting the evolution, the licensee improved the level instrumentation to include a tygon tube for an alternate level indication, revised the procedure to provide additional guidance for the operators, and conducted a detailed prejob briefing. The revised procedure was implemented without further incident approximately 1 day after the spill.

c. Conclusions

Although operator performance, shift supervision command and control, and overall communications were not effective in preventing the SG overfill event, the licensee's initial corrective actions were prompt, cautious, and thorough, and the subsequent investigation was self-critical and demonstrated the licensee's commitment to operations excellence.

O1.2 Operating the Steam Generator Blowdown System (Unit 3)

a. Inspection Scope (71707)

The inspectors observed the control room staff perform high rate steam generator blowdowns to the main condenser using Procedure 400P-9SG03, "Operating the Steam Generator Blowdown System."

b. Observations and Findings

On October 2, the inspectors observed the control room staff perform high rate steam generator blowdowns. In the past year, operators have made errors while performing this routine evolution that have resulted in unplanned increases in reactor power. The inspectors observed that in this instance the shift supervisor (SS) ensured that there were no distractions to the operators and he strictly controlled control room access. The reactor operator followed the procedure when performing the board manipulations and the control room supervisor displayed positive command and control of the activity. Operator communication included verbatim repeatbacks, and procedural performance included independent verification.

O2 Operational Status of Facilities and Equipment

O2.1 Degraded Battery Powered Emergency Lighting (Unit 3)

a. Inspection Scope (71707)

The inspectors performed a routine tour of the Train A emergency diesel generator and verified valve lineups, material condition, and housekeeping.

b. Observation and Findings

On August 29, the inspectors noted the electrolyte levels in some of the cells of Emergency Light 3E-ZGL-D80-05-100-04 were below the minimum level. The inspectors informed the Unit 3 SS, who contacted the system engineer. The system engineer verified the levels and requested electrical maintenance to adjust the levels.

The inspectors reviewed the design requirements of the emergency lights in the Updated Final Safety Analysis Report (UFSAR). Section 9.5.3.2.2.3 stated that the emergency lights should be capable of providing a minimum of 1.5 hours illumination. The lights in question were nonquality related and were designed to provide emergency lighting to support personnel egress upon the loss of power.

The inspectors discussed whether the emergency lights would have met design requirements with the system engineer. The system engineer indicated that the emergency lights were equipped with cells which had an 8 hour illumination rating and concluded that the lights would have met the design requirements even with the low electrolight level observed.

The licensee inspected other emergency lights in all three units and identified another light that had low electrolyte levels. The system engineer subsequently determined that the preventive maintenance task frequency for this type battery would be increased from once every six months to once every quarter.

c. Conclusions

Operations and engineering personnel responded appropriately to the inspectors identified battery electrolyte level discrepancy.

O2.2 Motor Control Center (MCC) Doors Found Open (Unit 1)

a. Inspection Scope (71707)

The inspectors toured the Unit 1 electrical penetration rooms and held discussions with operations personnel.

b. Observations and Findings

On September 14, the inspectors identified two Panel Doors, PHA-M3325 and PHA-M3514, on the Class 1E 480 volt MCCs that were open and other panel doors that were improperly secured. The MCCs were located on the 120 foot elevation west electrical penetration room and the 100 foot elevation east electrical penetration room.

The inspectors notified the control room and an auxiliary operator (AO) responded to the area. The AO identified that the door handle to PHA-M3514 was broken, the door latch to PHA-M3325 was bowed preventing the door from closing. The AO initiated Work Request 915103 to have the doors repaired.

The inspectors discussed the discrepancies with the site shift manager (SSM). The SSM indicated that a previous work request was generated to correct discrepancies with MCC PHM34. The inspectors informed the SSM that the doors identified on September 14, were from MCCs PHM35, PHM33, and PHM37. The SSM determined that a walkdown of all safety-related MCCs for each unit would be performed.

The inspectors questioned the SSM about the safety impact of having the doors open and the requirements for the doors to be shut. The SSM discussed the discrepancies with equipment qualification, fire protection, and system engineering personnel, and determined that the opened doors did not have a safety impact, nor were there any requirements for the doors to be shut. The SSM indicated that management's expectations were that licensee personnel ensure that the doors remain properly secured.

The inspectors inquired whether a Condition Report/Disposition Request (CRDR) had been initiated for the identified door discrepancies. The SSM indicated that a CRDR had not been written and subsequently generated a CRDR for followup documentation.

c. Conclusions

The MCC panel door discrepancies demonstrated a weak attention to detail by both operations and maintenance personnel.

O2.3 (Closed) Licensee Event Report (LER) 50-528/96003

a. Inspection Scope (92901)

Between May and August 1996, both the licensee and NRC identified instances where barriers doors to essential ventilation system boundaries were open. These instances impacted the ability of ventilation systems to perform during a design basis event. One of the events was the subject of LER 50-528/96003. The

inspectors reviewed these events, the licensee's safety and cause analyses, and their proposed corrective actions.

b. Observations and Findings

System Description

The auxiliary building essential ventilation system (licensee system designation EHA) was designed to maintain the area containing the essential safety features pumps at a measurable negative pressure following a loss of coolant accident to prevent the unfiltered release of possible airborne radioactivity to the surroundings. The EHA envelope includes the volume of the auxiliary building below the plant 100' elevation (essentially ground level). The EHA boundary includes the auxiliary feedwater (AFW) vaults, since they are connected through ventilation ducting. Additionally, the lower level shares boundaries with the fuel handling building and the outside yard.

During a safety injection actuation signal (SIAS), the EHA is isolated from the normal auxiliary building ventilation supply and exhaust. The lower levels are then aligned to the fuel handling building essential ventilation exhaust filter train. The design basis for EHA is discussed in UFSAR Section 9.4.2.2.

Technical Specification (TS) 3.7.8 requires that two independent trains of EHA be operable. Although the TS did not require testing for a negative pressure, a measurement of system flow was required. The licensee had established a test for negative pressure in this lineup in 1995 and had completed testing in all units in August 1996. On October 4, 1996, the licensee submitted improved TS, which included testing for a measurable negative pressure.

Control of Barriers

As discussed in Inspection Report 50-528, 529, 530/96-07, on May 7, 1996, the inspector, observing a leak rate test of a containment purge isolation valve in Unit 3, noted that technicians had propped open two doors to run a service air hose. The inspector determined that the technicians involved in the leak rate test had not contacted either the control room or the fire department as required by instructions printed on the doors and described in Procedure 40AC-9OP17, "Control of Security, Fire, and Heating, Ventilation, and Air Conditioning Barrier Doors." The inspector identified this as a noncited violation with minor significance.

The licensee determined, during their evaluation, that the labeling on the doors had contributed to the technician's confusion. Door number labels were at the top of doors and room number labels were at the center of the doors. Both door and room numbers were typically a letter and three digits with the letter and first digit referencing the building and elevation of the door. As a result, the first portion of most room and door numbers were identical. Procedure 40AC-9OP17 used the

door number as its reference. Procedure 40AC-9OP17 was subsequently revised and renumbered as Procedure 40DP-9ZZ17 on June 4.

Subsequent to this event, the licensee identified the following similar events:

- On June 6, the Unit 3 SS discovered a door between the auxiliary building and the fuel handling building had been propped open by carpenters erecting scaffolding. The carpenters had called the fire department as a sign on the door required, but had not called the control room as required by Procedure 40DP-9ZZ17. As corrective action, the carpenters were provided with training on the door procedure and the signs on the doors were modified. The licensee concluded that the fuel handling building essential ventilation system had been inoperable for the 45 minutes the door was opened. However, since there were no operations underway involving the spent fuel pool, the licensee met TS limiting conditions for operations

- On June 26, a painter in the access stairwell to the Unit 1 AFW vaults noted that both water tight doors to the area were open. The doors had been opened by a valve service technician who was working on a valve in the Train B AFW pump room. The licensee determined that the technician had not followed Procedure 40DP-9ZZ17. However, they determined that the open doors would not have prevented establishing a negative pressure in the EHA following a SIAS.

  As corrective action, the licensee put labels on the AFW vault doors stating the requirement to keep the doors closed.

- On August 2, contract maintenance technicians propped open an EHA boundary door after they had used the room number, instead of the door number, when asking the control room for authorization. The door was open for approximately 75 minutes when discovered and questioned by an AO. Subsequently, engineers calculated that it would not have been possible to maintain the EHA at a measurable negative pressure. The licensee concluded that both trains of EHA were inoperable for the 75 minutes the door was open. On September 4, the licensee submitted LER 50-528/96003, reporting this as a condition which could have prevented the fulfillment of a safety function.

These three events resulted from a combination of workers not familiar with the door control procedure and workers confusing the room number labels for the door number. The events on June 6, June 26, and August 2 were three examples of failure to follow procedures (Violation 528; 530/9613-01).

Although each of the events was identified by the licensee, the inspectors determined that they could have been prevented had the licensee implemented interim corrective actions in a timely manner. Instead, the immediate corrective

actions for the May 7 event and the subsequent events in June were limited to the crews and doors involved and long term corrective actions, although more comprehensive, had not been implemented. While the causes of the August 2 event were very similar to the causes of the previous three events, the event was significant in that it resulted in both trains of a safety system being inoperable. The licensee did implement more comprehensive interim corrective actions after the August 2 event by taking actions to increase worker awareness of the door control procedure requirements and by improving door labeling. The inspectors noted that the interim actions, while more comprehensive, were simple in approach and execution and considered that there was sufficient basis to have expected these actions to have been taken prior to the August 2 event.

c. Conclusion

The licensee did not implement fully effective corrective actions following a May, 1996, event involving the control of ventilation boundary doors, when they recognized weaknesses in worker understanding of door control procedures and in the labeling of doors. Three similar events subsequently occurred which could have been prevented had corrective actions been implemented. Following the third event, the licensee implemented more comprehensive interim corrective actions and planned longer term corrective actions to prevent recurrence.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments on Maintenance Activities

a. Inspection Scope (62707)

The inspectors observed all or portions of the following work activities:

- 32MT-9ZZ56 Motor Operated Valve Testing on Low Pressure Safety Injection Heat Exchanger Bypass Valve SIA-HV-306 (Unit 1)
- 33MT-9ZZ02 Freeze Seal Installation for Low Pressure Safety Injection Minimum Flow Recirculation Valve SIA-UV-669 Work (Unit 1)

b. Observations and Findings

The inspectors found these work activities were performed acceptably and in accordance with procedures.

M1.2 General Comments on Surveillance Activities

a. Inspection Scope (61726)

The inspectors observed all or portions of the following surveillance activities:

- 73ST-9XI16 Economizer Feedwater Isolation Valves - Inservice Test (Unit 3)
- 73ST-9ZZ18 Main Steam Safety Valve Online Set Pressure Verification (Unit 1)

b. Observations and Findings

The inspectors found these surveillances were performed acceptably and as specified by applicable procedures. In addition, see the specific discussion of surveillance observed in Section M4.1.

M1.3 Removal of the UGS (Unit 1)

a. Inspection Scope (62707)

On September 26, 1996, while in the process of lifting the Unit 1 UGS prior to defueling operation, one of two guide bushings became stuck on its guide pin and the arm holding the guide bushing was damaged. The inspectors attended a management review and prejob brief and observed the subsequent lift operation.

b. Observations and Findings

About midnight on September 26, as maintenance personnel were in the process of conducting the UGS lift operation, they heard a loud noise. Upon further inspection, they determined that one of the guide bushings had become stuck and, as the UGS was lifted, the arm that holds the bushing was deformed. Maintenance personnel lowered the UGS back into place and informed outage management.

The licensee convened a management review team at 6 a.m. to review the condition of the UGS and discuss plans for its subsequent removal. The inspectors noted that the management review was thorough, covering several possible scenarios. Ultimately, they concluded that a second lift attempt be made, provided that maintenance personnel add precautions to their work instructions and cameras to monitor the UGS removal.

The inspectors observed the prejob briefing and found that the appropriate personnel were in attendance and the work scope was adequately covered. The inspectors subsequently observed the lift operation from the refueling bridge. The licensee proceeded with caution and the lift attempt was successful.

At the end of the inspection period, the licensee had not yet determined what had caused the guide bushing to become stuck on the guide pin. The licensee has experienced difficulty in the past with the guide bushings and, in an earlier Unit 2 outage, the guide bushing had detached from the UGS. The licensee did identify that within 3 feet of the final position, there was little clearance between the guide bushing and the guide pin which appeared to contribute to interference. The licensee initiated a CRDR to evaluate this recurring problem and to develop repairs to the Unit 1 UGS.

c. Conclusions

The licensee responded effectively to problems experienced while lifting the Unit 1 UGS by stopping the evolution, involving plant management, and developing an appropriate plan. The root cause of the problem is being evaluated according to the CRDR process.

M4 Maintenance Staff Knowledge and Performance

M4.1 Class 1E Station Battery Channel A Discharge Test (Unit 1)

a. Inspection Scope (61726)

The inspectors observed the performance of Procedure 32ST-9PK03, "18 Month Surveillance Test of Station Batteries," Revision 10.

b. Observations and Findings

On September 23, the inspectors observed electrical maintenance technicians perform a surveillance test on the Class 1E Station Battery Channel A. During this observation, the technicians, in the process of performing Step 8.3.2.2, lifted the leads on the spare battery bank, prior to performing preceding Step 8.3.2.1 to open the output circuit breaker on the battery charger.

The inspectors questioned the test director about performing the step out of sequence. The test director indicated that the procedure allowed performance of steps out of sequence. The inspectors reviewed the procedure and did not find any such allowances. This discrepancy was discussed with the test director, who noted that the conduct of maintenance procedure allowed the performance of steps out of sequence.

The test director subsequently stopped work, prior to the technicians performing Step 8.3.2.2, and contacted an electrical maintenance supervisor to resolve the issue of performing the procedure out of sequence. The electrical maintenance supervisor directed the test director to perform the procedure as written.

The inspectors subsequently determined that Procedure 01DP-0AP01, "Procedure Process," Section 7.8, "performance of activities out of sequence," provided applicable requirements. The procedure allows the performance of steps out of sequence, if plant safety is not compromised, the performance does not cause an intent change to the procedure, the change is properly documented, the work leader has authorized it, and the SS is notified.

The inspectors noted that while the test director did not clearly understand the requirements for performing the procedure out of sequence, he took appropriate actions by stopping work, notifying supervision, and obtaining clarification.

The inspectors discussed the issue with the electrical maintenance department leader. The department leader indicated that it was management's expectation to perform the procedures as written. However, he was unclear as to the specific requirement for performing steps out of sequence and where they were located. The department leader noted that, in this instance, performing the steps out of sequence would not have affected the intent of the surveillance test.

The department leader concluded that the requirements for performing steps out of sequence were not well understood by maintenance department personnel and planned to provide training on the procedural requirements.

c. Conclusion

Management's expectations and procedural requirements for performing procedure steps out of sequence were not clearly understood by certain maintenance personnel performing the surveillance.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 (Open) Inspection Followup Item 50-528/96012-01

a. Inspection Scope

This item involved the control of EHA boundary penetrations. On July 7, the inspectors found an unsealed penetration through the 100' EHA boundary. The penetration had been opened to allow cable routing for an ongoing radio communications modification. The licensee initiated an investigation and determined that they had not established appropriate controls of the EHA boundary penetrations. The inspectors reviewed the licensee's response to this issue and performed EHA boundary walkdowns.

b. Observations and Findings

The licensee initiated CRDR 9-6-0691 to address this issue. As immediate action, on July 8, system and maintenance engineers performed walkdowns of the auxiliary buildings in all three units and identified a number of penetration deficiencies. Engineers performed analyses of the as-found condition in all units and determined that the additional area would not have had a significant impact on the ability of the EHA to maintain a negative pressure following a SIAS. An EHA system description is provided in Section O2.3 of this report.

The inspectors performed a subsequent walkdown and found eight additional unsealed penetrations in Units 1 and 2. These penetrations were for piping running from the south yard to the essential pipe tunnel area, a tunnel within the boundary of the EHA which is under the yard and runs between the refueling water tank and the auxiliary building. These penetrations appeared to be of more significance since they were located relatively near the tunnel which connects the EHA to the fuel handling building essential ventilation trains.

The inspectors determined that these unsealed penetrations had not been identified during the July walkdowns and the maintenance and system engineers were not aware of this condition. However, civil engineering had work requests, initiated in 1995, to repair these and 22 other EHA boundary penetrations. The inspectors reviewed the history of these penetrations with the licensee and was informed of the following:

- In 1991, the licensee established a penetration seal project to identify all building penetrations, establish the functions of each, and identify deficiencies.

- Eight thousand discrepancies were identitied in fire function barriers. These barriers were given first priority for repair and were all dispositioned by late 1994.

- Approximately 2000 discrepancies were identified in barriers with flood, high energy line break (HELB), and ventilation functions. The licensee had established that all these penetrations be classified as "not quality related." As a result, they did not place a high priority on the resolution of these deficiencies.

- An evaluation, documented in Calculation 13-NS-A73, determined that there was no safety significance to the unsealed barriers with flood and HELB functions. The licensee was not able to identify where they had performed similar reviews for the barriers with ventilation functions.

- By 1995, civil engineering had dispositioned all but 170 of these penetrations as "use-as-is." Work requests were initiated for the remaining 170 penetrations.

- At the time of the inspection, the licensee was in the process of evaluating 600 penetrations which served as radiation accident mitigation. They had not repaired any of the 170 penetrations with open work requests.

In response to the inspectors' questions, the licensee determined that the additional unsealed penetrations to the EHA boundary did not impact the operability of the EHA. They based this determination on the successful tests which had been performed in each unit during the past year (See Section E3.1).

The inspectors determined that, for both the penetrations identified in July 1996, and the penetrations identified during the September 1996 walkdown, the penetrations were not in conformance with design drawings. In each case, the licensee had established work requests to bring these penetrations into conformance with the design drawings. However, in both cases the licensee had not performed an evaluation of the impact on the EHA until questioned by the inspectors. Additionally, the deficiencies identified during the September 1996, walkdown had been known to the licensee since 1992.

The licensee had established that all the penetrations with flood, HELB, and ventilation boundary functions were not quality-related. This determination appeared to be inconsistent with the licensing basis and the quality assurance program documented in UFSAR Section 17.2. The licensee has established that design basis flood and HELB mitigation are safety-related functions. Additionally, EHA has been identified as a safety-related system with the primary function of preventing unfiltered release paths. At the end of the inspection, the licensee stated that they would review the classification of these penetrations. This item remains open pending the conclusion of this review and the licensee's development of a resolution for the penetrations.

c. Conclusions

Civil and system engineering organizations demonstrated poor communications on the status of unsealed ventilation boundary penetrations. Additionally, although civil engineering had made progress in the resolution of penetration design deficiencies, they had not ensured that the interim condition had been adequately reviewed for system impact.

E2.2 Feedwater Spill While Filling a SG (Unit 1) (92903)

The inspector reviewed the licensee's investigation in response to overfilling the SG. The engineering activities preceding the SG cooldown were not effective in

designing an accurate SG level monitoring system. Further aspects of this event are discussed in Section 01.1.

E3 Engineering Procedures and Documentation

E3.1 EHA Surveillance Testing

a. Inspection Scope (37551)

The inspectors reviewed Surveillance Procedure 33ST-9HF01 for the testing of each train of EHA in the SIAS mode and discussed the results of the test with the maintenance and system engineer.

b. Observations and Findings

Procedure 33ST-9HF01 had been revised in 1995 to add testing to verify that a measurable negative pressure between the EHA and outside atmosphere was established consistent with UFSAR requirements. Prior to this revision, the licensee had not performed a similar test since system startup testing. Testing had been completed in all units and had determined that each train could maintain a measurable negative pressure. A brief description of the system's design basis is provided in Section 02.3.

The inspectors reviewed the test results and noted considerable variations in the differential pressures achieved from train to train and from test to test. For example:

- The differential pressure achieved on August 14, 1996, for Unit 1 Train A was -0.045" water gage (w.g.). The following week, the differential pressure for Train B was -0.134" w.g.

- For Unit 2 Train A, testing in June 1995, established a differential pressure of -0.410 w.g. Testing of the same train in August 1996, established a differential pressure of -0.070" w.g.

Maintenance and system engineers could not explain why there was such a variation in the test results. The inspectors reviewed the test procedure and found that it did not establish sufficient prerequisites to control of the EHA envelope during the test, thus establishing uniform conditions to assure test repeatability, by ensuring that doors remained closed. Additionally, the test did not establish control of the ventilation configuration in other buildings. The inspectors noted that either of these factors could contribute to the variation of test results. Licensee engineering stated that they planned to address these issues in future procedure revisions.

Additionally, the surveillance established the test acceptance criteria to be measurable negative pressure, but did not provide a numerical limit. The inspectors subsequently found that a numerical acceptance criteria for a measurable negative pressure of -0.01 inch w.g. had been established in a 1987 UFSAR change evaluation. However, this minimum criteria had not been translated into either the surveillance test or other design basis documents. The inspectors did note that all of the current tests met the acceptance criteria.

The inspectors noted that the test acceptance criteria was based on the capabilities of the instrumentation and did not address other physical characteristics such as:

- air expansion caused by post loss-of-coolant accident room heating,
- potential wind effects on the outside building reference leg of the differential pressure instrumentation, and
- whether the measurement location was at a point in the building, which would be expected to be the least negative.

Engineering stated that they would assess these attributes and determine whether they had established the appropriate criteria. The inspectors noted that while a test for negative pressure was not required by the current TS, it was a requirement in the proposed improved TS, submitted by the licensee for NRC review on October 4, 1996.

c. Conclusions

Engineering's recently established testing of the EHA design basis requirement to develop a measurable negative pressure was seen as improvement to the testing program, although the acceptance criteria and the initial conditions for the test had not been well established to assure that the test results were both accurate and could provide meaningful trend information.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) LER 50-529/96005: inadequate procedure controls allow equipment qualification boundary to be breached. On June 12, a hatch through the 100' elevation of the Unit 2 main steam support structure, which leads to the Train B AFW pump room, was open for approximately 8 hours. The licensee subsequently determined that the hatch served as a barrier to protect the AFW pump room vaults from the environmental and flooding impacts of a postulated HELB. Additionally, they determined that the hatch served as an EHA boundary since the AFW vaults communicate with the auxiliary building through ventilation ducts. However, these functions of the hatch were not captured in the licensee's door control Procedure 40DP-9ZZ17.

The licensee determined that the personnel involved in opening the hatch had properly reviewed and followed the door control procedure. Additionally, the appropriate operations and ventilation maintenance engineering personnel had been involved in the initial assessment for opening the door. The licensee found that an error had been made in a recent revision of the door control procedure. The failure to have a procedure adequate for the circumstances is a violation. The inspectors reviewed CRDR 2-6-0123, and found the licensee's investigation, safety analysis, and corrective actions to be appropriate. This issue is being treated as a noncited violation consistent with Section VII of the NRC Enforcement Policy (50-529/9613-02).

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 RP Controls

a. Inspection Scope (71750)

During the inspection period, the inspectors performed several tours in the radiological controlled areas including high radiation and locked high radiation areas. Specifically, the equipment drain tank (EDT) rooms, 88 foot elevation pipe chases, and mechanical piping penetration rooms were examined.

b. Observations and Findings

On August 29, the inspectors identified that Valve SIBV-832 (High Pressure Safety Injection Header Drain and Test Valve), located in the Unit 2 east mechanical piping penetration room, had a yellow shoe cover wrapped around a leaking pipe cap in place of a drip catch. Tape labeled as "Internal Contamination" was used as the posting information. In addition, the inspectors observed that a piece of the tape used to label the covering had fallen off and was stuck to the floor. The inspectors showed an RP department leader the drip catch, and the leader concluded that the drip catch was unacceptable and did not meet his expectations. RP subsequently replaced the containment with a proper drip catch. The inspectors determined these actions were acceptable.

On September 18, the inspectors and a RP technician toured the Unit 1 EDT room. Although the EDT room was a locked high radiation area, it was not posted as a contaminated area. Additionally, the room had last been surveyed approximately 14 months prior to the inspectors' entry and licensee entries into this room were infrequent. The inspectors observed a valve in the mezzanine area above the EDT was labeled "Contaminated Area - bottom of valve and inside packing gland" and had no containment or enclosure device. In addition, the inspectors observed a vertical pipe with boron leaking from a flange coupling. After leaving the EDT room,

the inspectors performed a personal frisk and identified contamination of approximately 2000 DPM/100 cm^2 on a shoe. The licensee decontaminated the shoe and prepared a personnel contamination report.

Radiation protection surveyed the EDT room and identified contamination on the pipe flange and pipe, the posted valve, on the tank below the valve, and on the floor of the room. The licensee subsequently posted the EDT room as a contaminated area. The RP operations manager indicated that it would have been prudent to survey or to have required protective clothing prior to entering this infrequently surveyed room.

The licensee issued a RP night order establishing precautionary contamination controls when entering any area that has not been accessed within the last 90 days. The licensee also initiated a CRDR to evaluate the event and provide corrective actions. The inspectors determined these actions were appropriate.

c. Conclusions

Radiological protection personnel demonstrated weak health physics practices when entering infrequently accessed areas that have not recently been surveyed and in the fabrication of an inadequate drip catch. However, RP management responded appropriately to inspectors concerns.

R2 Status of RP and Chemistry Facilities and Equipment

R2.1 Material Condition and Housekeeping

a. Inspection Scope (71707, 71750)

The inspectors performed routine walkdowns and inspections of the facility and assessed plant material condition and housekeeping.

b. Observations and Findings

On August 29, the inspectors identified an inadequate containment on Valve CHB-HV530 (Refueling Water Tank to Safety Injection Train B Valve). The containment had openings that could allow contamination to leak out. The drip hose connection leaked liquid onto the floor below the valve. The floor drain, containing the drip hose, had boron build-up above the drain cover, which had smearable contamination of 1500 DPM/100 cm^2. The licensee repaired the containment and decontaminated and modified the drain cover. The inspectors determined these actions to be acceptable.

On September 17, the inspectors identified a 12 foot length of unattached grounding cable in the Unit 2, 88-foot pipe chase. The licensee issued a work request to attach the grounding cable.

On September 18, the inspectors identified the following housekeeping deficiencies in the Unit 1, 88-foot pipe chase: an unusual radiation protection stantion, a 12 x 12 foot plastic sheet covered with debris, and a bag of old light bulbs. The licensee removed all materials from the area. The inspectors determined this action to be appropriate.

As noted in Inspection Report 50-528, 529, 530/96-12, the licensee had recently initiated a housekeeping improvement program which had established housekeeping standards for 111 plant areas. Throughout this inspection period, the licensee was in the process of inspecting these areas and addressing weaknesses. At the end of the inspection period, they had concluded that only 9 areas of the 111 had met their standards.

c. Conclusions

The inspectors continued to identify material condition and housekeeping issues which have not been previously identified by the licensee. The licensee was continuing to implement their housekeeping improvement program.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on October 2, 1996. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Flood, Department Leader, System Engineering
C. Foster, Engineer, Design Engineering
R. Fullmer, Director, Nuclear Assurance
J. Gaffney, Department Leader, Radiation Protection
J. Glover, Engineer, System Engineering
R. Hazelwood, Engineer, Nuclear Regulatory Affairs
W. Ide, Vice President, Engineering
K. Jones, Section Leader, Design Engineering
A. Krainik, Department Leader, Nuclear Regulatory Affairs
R. Lucero, Department Leader, Electrical Maintenance
D. Mauldin, Director, Maintenance
G. Overbeck, Vice President, Nuclear Operations
M. Powell, Department Leader, Nuclear Engineering
F. Riedel, Acting Director, Operations
C. Seaman, Director, Emergency Services
M. Shea, Director, Radiation Protection

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
IP 61726: Surveillance Observations
IP 62707: Maintenance Observations
IP 71707: Plant Operations
IP 71750: Plant Support Activities
IP 92901: Followup - Operations
IP 92903: Followup - Engineering
IP 92904: Followup - Plant Support
IP 93702: Prompt Onsite Response to Events

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-528; 530/96013-01	NOV	failure to follow procedures for ventilation boundary door control
50-529/96013-02	NCV	inadequate procedure controls allow equipment qualification boundary to be breached

Closed

50-528/96003	LER	open auxiliary building door causes fuel building essential filtration inoperability
50-529/96005	LER	inadequate procedure controls allow equipment qualification boundary to be breached
50-529/96013-02	NCV	inadequate procedure controls allow equipment qualification boundary to be breached

Discussed

50-528/96012-01	IFI	control of ventilation boundary penetrations
50-530/96007-04	NCV	failure to follow procedure for blocking open controlled doors

LIST OF ACRONYMS USED

AFW	auxiliary feedwater
AO	Auxiliary Operator
CRDR	condition report/disposition request
EDT	equipment drain tank
EHA	auxiliary building essential ventilation system
HELB	high energy line break
LER	Licensee Event Report
MCC	Motor Control Center
RP	Radiological Protection
SIAS	safety injection actuation signal
SS	Shift Supervisor
SSM	Site Shift Manager
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
UGS	upper guide structure
w.g.	water gage